MAP MANUAL POTENTIOMETER
4-20 mA SIGNAL SOURCE
MAI 4-20 mA SIGNAL AMPLIFIER
OPERATING MANUAL

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MADE IN USA

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Avatar Instruments, Inc. 16587 Coastal Highway Lewes, DE 19958
Phone: (302) 703-6865 Fax: (302) 703-6876 www.scrpower.com

INTRODUCTION

This manual was designed to assist you in installing, operating and maintaining your new mA signal interface control in a safe manner. Upon reading and following the instructions in this manual, you will be rewarded many years of trouble free service from your new MAP/MAI. It is essential that you read the captions followed by the safety warnings; they are located through out the manual and are very easy to identify.

 Indicates important installation, operating, servicing instructions

 Indicates dangerous voltage present and risk of electric shock

DESCRIPTION

The Avatar Instruments MAP and MAI signal cards generate a 4-20mA signal (1,000 Ohms / 20VDC compliance). The 4-20mA signal is an industry standard analog control and communications signal.

MAP stands for "**M**illi**A**mp **P**otentiometer".
MAI stands for "**M**illi**A**mp **I**nterface".

The MAP and MAI will control Avatar Instruments series A, B, C and CP SCR Power Controllers.
The MAP can control multiple Avatar Instruments SCR Power Controls. Consult Avatar with model and number of SCRs you need to control. The MAP/MAI will also control SCR Power Controllers made by other manufacturers that use a 4-20mA input signal.

The MAP comes with a 500 Ohm panel mount potentiometer on three (3) feet of wire leads, a dial with a 0-100% scale and knob. The MAP comes with a mounting snap track. You turn the potentiometer to adjust the 4-20mA signal.

NOTE: *There is no "click-stop" on the potentiometer. It is a 280° single turn with 5 In-LBS stop strength.*

The MAP can use a 2 watt potentiometer from 100 – 1,000 Ohms for input control.
The MAP is optimized for a 500 Ohm potentiometer input control.

The MAI is a 0-20mA signal amplifier. It will take a lower level 0-20 or 4-20mA signal and amplify that signal to a 20mA 1,000 Ohm / 20V strength signal.
The MAI comes with a mounting snap track.

The MAP potentiometer and the 4-20mA output signal of both the MAP and MAI are isolated.

For NEMA 4/4X or 3R rated potentiometer, contact Avatar Instruments.

For LINEAR 0-5 or 0-10 VDC Analog Signal use Avatar MAI-xxx milliamp interface card.
MAI-05V takes a 0-5VDC signal input and outputs 4-20mA.
MAI-10V takes a 0-10VDC signal input and outputs 4-20mA.

INSTALLATION

WARNING: FIRE HAZARD!! Even the best electronic components CAN FAIL SHORTED, KEEPING FULL POWER ON! Provide a completely SEPARATE (redundant) OVER TEMPERATURE SHUTDOWN MEANS to switch power off if safe temperature is exceeded.

WARNING: HIGH VOLTAGE!! This control must be installed in a GROUNDED enclosure by a qualified electrician. In accordance with any and all local and national electric codes including NEC and any other applicable codes. Provide a safety interlock on door to remove power before gaining access to device. *The MAP & MAI do not have a metal case, frame, or chassis. Nothing that has to be grounded for shock safety. The MAP & MAI is on an insulating plastic structure. When placed in a metal box, the box can be grounded.*

To reduce the risk of electrocution, **TURN ALL POWER OFF** to wires that will be connected to the MAP or MAI before making any connections. The MAP & MAI controller must be installed in an enclosure for protection against electrocution. Remember, solid state devices are never "off" unless you physically disconnect the incoming electrical power.

ELECTRICAL CONNECTIONS: FIELD TERMINAL TORQUE RATING: 5 IN-LBS
See "WIRING DIAGRAM" pages 5 & 6

AC POWER INPUT:

The MAP and MAI require incoming power to generate the 4-20mA output signal.
Power input (AC MAINS) is connected to terminals labeled "J1-AC MAINS"
For 120 VAC power supply wire to terminals 2 & 3
For 208-240VAC power supply wire to terminals 1 & 3
For 480VAC power supply wire to terminals 1 & 4
Fuse /protect power input as per NEC, UL or any applicable codes.

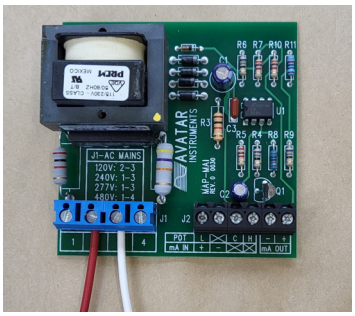


Photo shows 120VAC power wiring

24VDC POWER INPUT:

For optional 24VDC input use model MAP-24VDC.

INPUT CONTROL POTENTIOMETER for MAP:
Connect the potentiometer leads to terminals marked **L, C & H**. These correspond to potentiometer connections. **Terminal torque is 5 In-Lbs for potentiometer wire terminal block.**

INPUT CONTROL SIGNAL for MAI:
Connect the control signal to the terminal block labeled "mA IN + -" observing proper polarity (positive to "+" and negative to "-"). **Terminal torque is 5 In-Lbs for mA input block.**

OUTPUT CONTROL mA SIGNAL:
Connect the control signal to the terminal block labeled "mA OUT - +" observing proper polarity (positive to "+" and negative to "-"). **Terminal torque is 5 In-Lbs for mA output block.**

SPECIFICATIONS

INPUT SIGNAL:

MAP POTENTIOMETER .....100-1000 ohm (500 ohm optimum)
MAI 0-20mA.....<1.5V (75 ohm input)
DC Voltage input ….....consult Avatar

OUTPUT SIGNAL: 0-20mA (4-20mA using 100-1000 ohm potentiometer input). 20mA Class 2 Signal.

OUTPUT SIGNAL STRENGTH/COMPLIANCE: .....20mA @ 1000 ohms (20V max.)

FIELD TERMINAL TORQUE RATING: 5 IN-LBS

POTENTIOMETER ROTATION: 280°

POTENTIOMETER STOP STRENGTH: 5 IN-LBS (THERE IS NO "CLICK-STOP")

POTENTIOMETER IP RATING: IP 40

ISOLATION:
LINE - SIGNAL.....2500 VAC
INPUT - OUTPUT .....not isolated

REGULATION: .....zener voltage regulated, OP amp controlled current source

POWER REQUIREMENT: .....5W @ 120V, 208-277V, and 480V

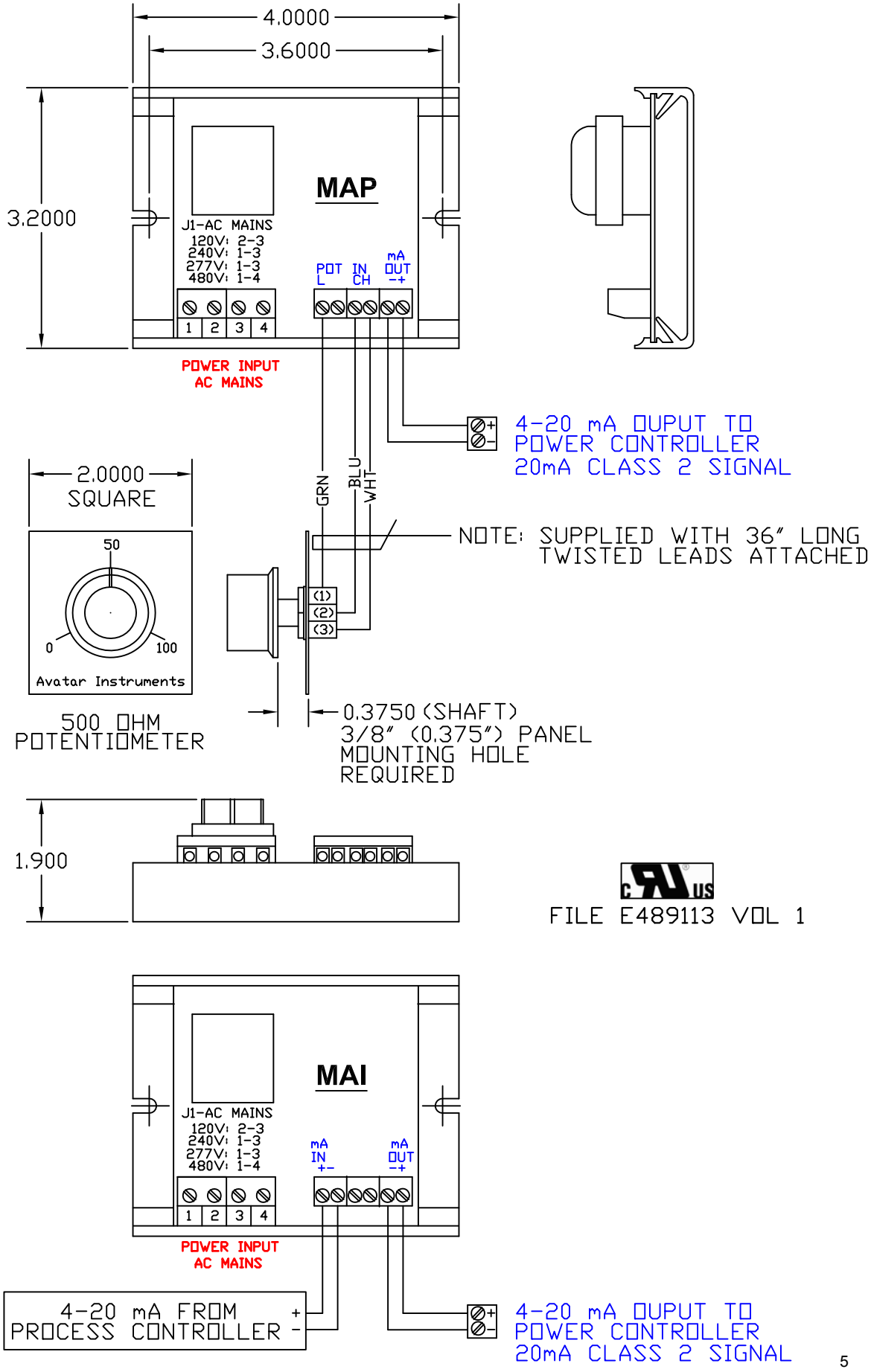
PRIMARY FUSING: CC Type ATQR1/10, FNQ-R-1/10, KLDR.100

WEIGHT: .....1 lb.

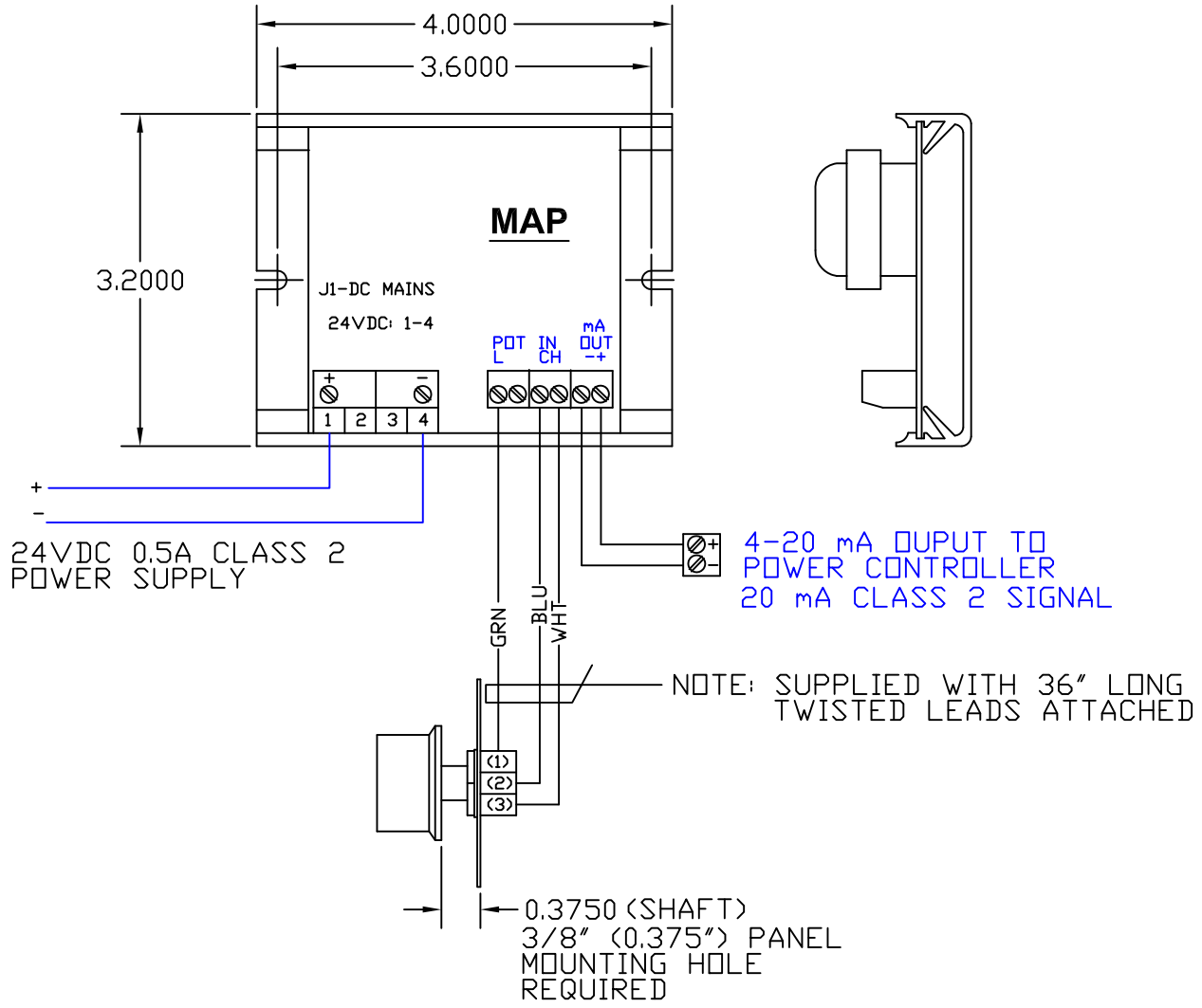
WARRANTY All Avatar Instruments products carry a full three year, from date of purchase, parts and labor warranty against component failure and defects in workmanship. In the event your controller fails to perform properly, **contact Avatar to obtain a return authorization number**. Controllers sent to Avatar for warranty service that have no apparent defect will be treated as a standard repair and a $50.00 charge will be applied. Avatar will repair or replace any unit that failed due to defective parts or assembly. This warranty DOES NOT cover damage due to shipping, abuse, misapplication, user error or operation beyond specified rating. Avatar is not responsible for any subsequent or other damage experienced in use of this device.

contact@avatarinstruments.com

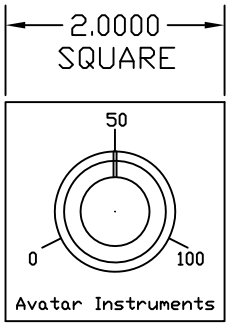
PHYSICAL DIMENSIONS
& WIRING DIAGRAMS
MAP / MAI



PHYSICAL DIMENSIONS
& WIRING DIAGRAM
AVATAR INSTRUMENTS MAP 24VDC



FILE E489113 VOL 1



500 OHM
POTENTIOMETER

CUSTOMER NOTES:



Avatar Instruments, Inc. 16587 Coastal Highway Lewes, DE 19958
Phone: (302) 703-6865 contact@avatarinstruments.com www.scrpower.com